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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,099	09/28/2005	Atsushi Tanno	OGW-0391	1690

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EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1791

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,099	Applicant(s) TANNO, ATSUSHI	
	Examiner Justin R. Fischer	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boiocchi (US 5,695,578, of record) and further in view of Kojima (JP 58167203, of record). Boiocchi is directed to a pneumatic tire construction comprising at least two belt plies 7,8 and a belt cover ply 9 formed of circumferentially-oriented cords. The reference further teaches that the axial outer ends of said belt cover ply are spaced from the respective axial outer ends of the widest width belt ply by an amount S' between 5 and 10 mm (Column 5, Lines 5-15).

In regards to radial separation of the respective axial ends, the reference generally depicts the axial ends of the belt cover ply and the belt plies as being at approximately the same radial height. It is particularly noted that the belt cover ply is not described by Boiocchi as extending a significant distance in the shoulder region and the upper sidewall. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to form the tire of Boiocchi in accordance to the claimed quantitative relationship. Lastly, the claimed quantitative relationship is a function of the tire section height, which varies between types of tires (heavy-load tires and agricultural

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tires have larger section heights)- this suggests that the claimed quantitative relationship is even more likely to be satisfied in the tire of Boiocchi.

Lastly, with respect to the independent claim, Boiocchi is completely silent with respect to the coating rubber of the belt cover ply. Kojima, on the other hand, suggests the use of a coating rubber for belt plies having a loss factor or tangent delta greater than 0 and less than 0.10 in order to eliminate the occurrence of fatigue and deterioration commonly experienced during running (Abstract). In this instance, a fair reading of Kojima suggests that the coating rubber is broadly applicable for all belt plies since the disclosed benefits are equally applicable to the general class of belt plies (working plies and protective plies). Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to use a coating rubber having a loss factor less than 0.1 in the belt cover ply of Boiocchi.

Regarding claims 2 and 10, Boiocchi suggests that the belt cover ply can be formed by helically wrapping an individual cord or a tape comprising a plurality of cords with a plurality of coils disposed side by side (Column 5, Lines 20-30)- Such arrangements are recognized as being conventional in the tire industry. Further, it is well recognized that such belt cover plies are commonly formed by partially overlapping adjacent coils- one of ordinary skill in the art at the time of the invention would have recognized the language "side by side" as including the conventional configuration required by the claimed invention.

3. Claims 3, 5, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boiocchi and Kojima as applied in claim 1 and 6 above, respectively,

and further in view of Mochida (JP 02074403, of record) and Yamamoto (JP 06092108, of record) . As detailed above, Boiocchi in view of Kojima substantially teach the claimed tire construction, including an outermost belt cover ply that extends beyond underlying belt plies. While Boiocchi fails to include a belt edge cushion rubber layer, it is extremely well known to include such a cushion layer in order to eliminate the buildup of stresses in the shoulder region, as shown for example by Mochida (reference character 21- Page 4, 2nd Column) and Yamamoto (Abstract and Figures). It is particularly noted that Mochida and Yamamoto (Figure 1) are directed to an extremely similar tire construction in which an outermost belt cover ply extends beyond underlying belt plies. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include a conventional belt edge cushion rubber layer in the tire of Boiocchi.

4. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boiocchi, Kojima, Mochida, and Yamamoto as applied in claims 3 and 11 above and further in view of Motomura (US 5,215,612, of record). While Mochida provides motivation to include a belt edge cushion rubber in the tire of Boiocchi, the reference is completely silent with respect to the loss factor or tangent delta of the cushion rubber. Motomura, on the other hand, recognizes the known use of rubber compositions having a tan delta between 0.07 and 0.15 for similar belt edge cushion rubber layers (Column 3, Lines 45-55)- such a rubber is recognized as providing suitable reinforcement without generating/accumulating heat. One of ordinary skill in the art at the time of the invention would have found it obvious to use a rubber having a tangent delta below 0.15 to form

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the cushion rubber of Boiocchi in view of Kojima and Mochida for the reasons detailed above. Lastly, while the tangent delta is recorded at room temperature, those compositions having a tangent delta at the lower end of the range would not be expected to more than double with an increase of 40 degrees Celsius and applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed range.

5. Claims 1, 6, 8-10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serra (WO 2002/26878, of record) and further in view of Boiocchi and Kojima. As best depicted in Figure 1, Serra is directed to a pneumatic tire construction comprising a pair of belt plies 106a, 106b, and under tread rubber layer 111, a cap tread rubber layer 111, and a wing chip rubber layer 110. It is further noted Serra suggests the inclusion of a belt cover ply 106c. In this instance, Serra describes the layer as optional (Page 24, Lines 27+) and while it is depicted as having an axial extent approximately equal to the width of the underlying belt structure, the reference fails to place a criticality on the axial extent of the belt cover ply. It is well known to arrange the belt cover ply such that it extends beyond the ends of the underlying belt structure in order to ensure complete protection of the underlying belt structure, as shown for example by Boiocchi. It is emphasized that Serra places no criticality on the axial extent of the belt cover ply and applicant has not provided a conclusive showing of unexpected results. Lastly, in such an instance, the ends of the belt cover ply and the underlying belt structure are not separated by a substantial radial distance and one of ordinary skill in the art at the time of the invention would have expected the tire of Serra

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to satisfy the claimed range, it being noted that the claimed quantitative relationship is a function of the tire section height, which varies between types of tires (heavy-load tires and agricultural tires have larger section heights)- this suggests that the claimed quantitative relationship is even more likely to be satisfied in the tire of Serra.

Lastly, with respect to the independent claim, Serra is completely silent with respect to the coating rubber of the belt cover ply. Kojima, on the other hand, suggests the use of a coating rubber for belt plies having a loss factor or tangent delta greater than 0 and less than 0.10 in order to eliminate the occurrence of fatigue and deterioration commonly experienced during running (Abstract). In this instance, a fair reading of Kojima suggests that the coating rubber is broadly applicable for all belt plies since the disclosed benefits are equally applicable to the general class of belt plies (working plies and protective plies). Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to use a coating rubber having a loss factor less than 0.1 in the belt cover ply of Serra.

With respect to claims 8 and 16, Serra depicts the radially inner end of the wing chip rubber in the shoulder portion of the tire. Given such a general disclosure, one of ordinary skill in the art at the time of the invention would have readily appreciated a wide variety of embodiments, including those in which respective components are separated by at least 10 mm. It is emphasized that Serra fails to place a criticality on the axial separation and the figures of Serra generally depict a separation that would be expected to be on the order of 10 mm. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed separation.

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6. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serra, Boiocchi, and Kojima as applied in claims 6 and 14 respectively and further in view of Kan (US 4,444,236, of record) and Haneda (JP 07257116, of record). As detailed above, Serra discloses a pneumatic tire construction comprising a cap tread layer and a base tread layer (undertread). While the reference fails to expressly disclose the respective loss factors (tangent delta) for each layer, Kan teaches a similar cap/base assembly and suggests a loss factor relationship in accordance to the claimed invention. In particular, such a construction provides a tire that is balanced in rolling resistance and wet grip (Column 1, Lines 1-20 and Tables 1-3). It is emphasized that each of the inventive cap/base assemblies listed in table 3 satisfies the quantitative relationship of the claimed invention. It is further noted that while the tangent delta is recorded at 30 degrees Celsius, the listed compositions would not be expected to more than double with an increase of 30 degrees Celsius and applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed range. Haneda has been further provided to evidence the use of rubber compositions (for wing chip rubber layers) having a relatively low tangent delta in order to reduce the rolling resistance. As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the wing chip rubber layer and the tread base layer in accordance to the claimed invention.

Response to Arguments

7. Applicant's arguments filed February 19, 2008 have been fully considered but they are not persuasive. Applicant contends that Kojima uses a coating rubber for a

belt ply, not a belt cover ply and that the two types of belt layers perform different functions rendering the proposed modification non obvious.

As set forth in the rejection above, Kojima suggests the use of a coating rubber having a loss factor between 0 and 0.10 in order to eliminate fatigue due to heat generation and deterioration during running. The reference further teaches that the coating rubber is used for belt plies. In this instance, one of ordinary skill in the art at the time of the invention would have recognized such a teaching as being directed to belt plies in general. It is emphasized that the aforementioned benefits are equally desired in working belt plies and protective belt plies. Furthermore, while the respective plies have different functions, such plies primarily achieve different properties due to the cord material and the inclination angle of said cords (zero degree as compared to, for example, 15 to 35 degrees with respect to the EP of the tire).

As noted above, a fair reading of the reference suggests the general use of the coating rubber in belt plies in general, it being noted that the respective plies are similarly located in the crown region and experience similar stresses during running. Sandstrom (US 5,394,919) is additionally provided to evidence the general description of coating rubbers having the claimed loss factor that are applied to belt plies in general (Abstract and Table 2). There is absolutely nothing in Kojima that excludes the use of the relevant coating rubber in a belt ply formed of circumferentially oriented cords, as opposed to inclined cords, and given the disclosed benefits of such a coating rubber, one of ordinary skill in the art at the time of the invention would have found it obvious to use the coating rubber of Kojima in the belt layer (auxiliary belt strip) of Boiocchi.

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Lastly, it is noted that compositions having low heat generation (loss tangent) and high mechanical properties are commonly used in a wide variety of topping/coating rubbers.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Justin Fischer
/Justin R Fischer/
Primary Examiner, Art Unit 1791